Attachment 2

Cost Sharing and Implementation Options (slides 3-9)

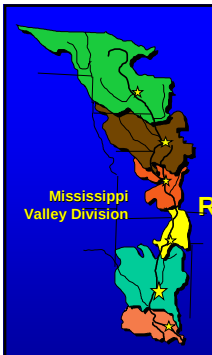
Ecosys. Restoration Alternatives (slides 10-39)

Navigation Efficiency Alternatives (slides 40-86)

Feasibility Study Schedule (slide 87)

Presented by
Denny Lundberg, Ken Barr and Rich Manguno

US Army Corps of Engineers



Upper Mississippi River - Illinois Waterway Restructured Navigation Study

GLC
5 Aug 2003

1

Agenda

- Cost Sharing Issues
- Ecosystem Restoration Alternatives
  - Decision Model
- Navigation Efficiency Alternatives
  - Preliminary Economic Evaluation
  - Decision Model
  - Environmental Impact Modeling & Mitigation Planning
- Schedule

2

Cost Sharing

- MFR will be revised by 1 Oct with tentative recommendation for cost sharing including application to ecosystem restoration alternatives.
- Discussion ongoing with ASA(CW).
- Cost sharing tentative recommendation to be presented at October public meetings.
- Cost sharing recommendation to be finalized at Alternative Formulation Briefing in Jan 04.

3

Cost Sharing

- How will mitigation be funded over planning horizon?
  - Project based with navigation improvements.
  - Funding continues until closeout of project.
  - Trust Fund not practical.
  - Impacts of WRDA 03 Mitigation requirements?

4

Cost Sharing

- How are Project Lands defined?
  - Fee title lands acquired for construction, operation and maintenance of the 9' channel project

5

Implementation Options

- Expand EMP
  - Increasing program limits does not maintain linkage with integrated plan
  - EMP should continue in short term

  Programmatic Authorizations(100% Federal and cost shared)
  - O&M features, localized dredging, notching wing dikes
  - Moderate size backwater restoration
  - Small island creation
- Project Specific Authorization(Projects ready to go)
  - Spunky Bottoms
  - Emiquon
  - Pool 25 water control change

6

Implementation Options

- Project Specific Authorization With Subsequent Committee Approval for Construction(Less than feasibility level)
  - Fish Passage
  - Pool management requiring land acquisition
- Identify Projects for Subsequent Authorization(Feasibility level)
  - Fish Passage
  - Pool management requiring land acquisition
- Review Team recommends combination

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Floodplain Ownership

Mississippi River Reach	Total Area	Corps Ownership	FWS Ownership	% of Floodplain
Pool 1	3,736	33		0.88%
Pool 2	22,780	1219		5.35%
Pool 3	23,594	5605		23.76%
Pool 4	70,092	2900	43389	66.04%
Pool 5	29,945	7565	x	25.26%
Pool 5a	16,895	3915	x	23.17%
Pool 6	25,022	337	5733	24.26%
Pool 7	41,560	7066	46469	128.81%
Pool 8	47,132	10179	x	21.60%
Pool 9	52,188	8950	39608	93.04%
Pool 10	39,881	3794		9.51%
MVP	372,825	51,563	135,199	50.09%
Pool 11	31,972	4658	13368	56.37%
Pool 12	21,991	4877	52973	263.06%
Pool 13	85,323	9147	x	10.72%
Pool 14	65,867	4473	x	6.79%
Pool 15	10,312	5		0.05%
Pool 16	33,921	5139		15.15%
Pool 17	80,588	8566	8375	21.02%
Pool 18	126,945	7931	x	6.25%
Pool 19	122,600	6		0.00%
Pool 20	70,432	250	8300	12.14%
Pool 21	61,107	8358	x	13.68%
Pool 22	88,681	6374	x	7.19%
MVR*	799,739	59,784	83,013	17.86%
Pool 24	90,314	7223.61	1737	9.92%
Pool 25	87,608	9748.14	3751	15.41%
Pool 26	145,840	13093	435	9.28%
Open River**	665,942	3720.82	17756	3.23%
MVS	989,704	33,786	23,679	5.81%

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Floodplain Ownership

District	Total Acreage	Corps Ownership	FWS Ownership	% of Floodplain
MVP	372825	51563	135199	50.09%
MVR*	799739	59784	83013	17.86%
MVS**	989704	33785.57	23679	5.81%

* Acreage of Corps ownership is only land, not land and water, so % of FP is probably an underestimate.

** Note: Shawnee National Forest owns land here, but how much is in FP, and how much is bluff is unknown.

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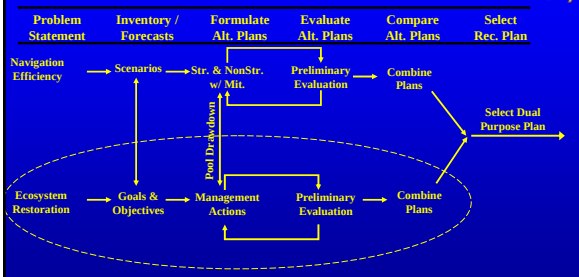
Ecosystem Restoration



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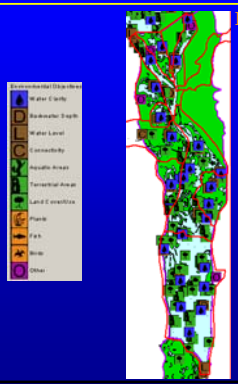
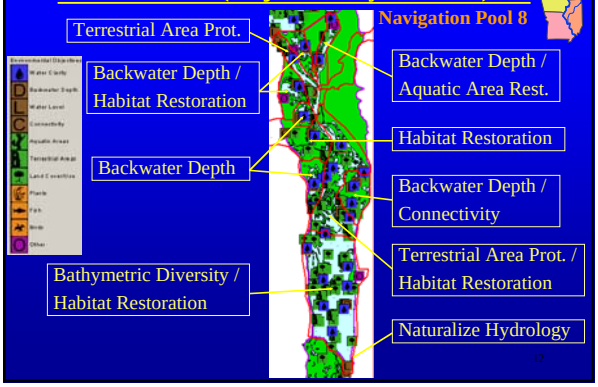
UMR-IWW Environmental Alternative Formulation



11

UMR-IWW Environmental Alternative Formulation (Objectives by Subarea)



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Objectives by Subarea
Bathymetric Diversity / Habitat Restoration

13

Management Actions (Measures) by Subarea
Island Construction / Dredging

14

Island Protection and Restoration
Pool 8 Islands HREP Phase II, near Stoddard, Wisconsin

October 1961 | August 1994 | August 2000

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Water Level Management Workgroup

Range of WLM Actions:

1. Lower the pool level below the existing operating band
   - Growing Season Drawdown
   - Winter Drawdown
   - Increased gradient during Drought Conditions
2. Raise the pool level above the present operating band
   - Fall/Winter Raise
   - Spring Raise
3. Change control point from mid-pool to dam
   - Fall - Winter
   - Spring
4. Modified distribution of flow through dam gates
   - Winter
   - Whole Year (Fish Migration, Habitat)
5. Minimize short-term water level fluctuations
   - Year Round
6. Intentional water level fluctuations (limited range)
   - Winter

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Prioritizing Criteria - Drawdowns

Hydrology
Identified Objective Supported by Action
Dredging Requirements
Cost Benefit
(Tributary)
Recreation Impacts
Benefits (acreage)
Environmental Impacts
Water Supply
Commercial Navigation Impacts
Commercial Fisheries Impacts

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Relative Efficiency: Benefits vs. Costs

	Benefits	Costs				Efficiency
Pool	Acres Exposed	Dredging	Water Supply	Hydropower	Composite Cost	B/C Efficiency
11	High	High	High	High	High	Very High
12	Moderate	High	High	High	High	High
13	High	Moderate	High	High	Moderate	High
14	Moderate	High	Low	High	Moderate	Moderate
15	Very Low	Very High	Low	Low	Moderate	Low
16	Moderate	Moderate	High	High	Moderate	Moderate
17	Very Low	High	High	High	High	Low
18	Moderate	Moderate	High	High	Moderate	Moderate
19	High	High	Low	Very Low	Moderate	High
20	Low	Low	Low	High	Low	Very Low
21	Low	Low	Low	High	Low	Very Low
22	Low	Low	High	High	Moderate	Low
Dresden	Very Low	High	Low	High	High	Low
Marseilles	Very Low	High	High	High	High	Low
Starved Rock	Very Low	High	High	Low	High	Low
Peoria	High	Moderate	Low	High	Moderate	High
LaGrange	High	Very Low	High	High	Low	Moderate

Overall Suitability

River	Pool	Recreation Conflict	Barge Fleeting and Terminal Impacts	Competing Environmental Interests	Commercial Fisheries Impacts	Other Concerns	Suitability Rating
UMR	11	Moderate	High	None Identified	Low		Moderate
	12	Moderate	Moderate	None Identified	Moderate		Moderate
	13	Moderate	High	None Identified	Very Low		Moderate
	14	Moderate	Moderate	None Identified	Moderate	Rock Cut, LeClaire Canal	Low
	15	Moderate	Moderate	None Identified	High	Major Rock Cut	Low
	16	Moderate	Moderate	None Identified	High	Rock Cut; lock approach currents	Moderate
	17	High	Moderate	None Identified	Moderate		High
	18	Moderate	High	None Identified	Low	Rock Cut	Moderate
	19	Moderate	Moderate	None Identified	Very Low	Dam 19 Owned by Ameren UE	Low
	20	Very High	Moderate	None Identified	Moderate	Effects of operations on 19 Rock Cut	High
	21	Moderate	Moderate	None Identified	Very High		Moderate
	22	High	Moderate	None Identified	Very High		High
IWW	Dresden	High	Moderate	None Identified	Very High	Rock Cut	High
	Marseilles	High	Moderate	None Identified	Very High	Major Rock Cut	Moderate
	Starved Rock	High	Moderate	None Identified	Very High	Rock Cut	High
	Peoria	Low	Very Low	None Identified	Moderate	Minor Rock Cut	Low
	LaGrange	High	Low	None Identified	Moderate	Major Rock Cut	Moderate

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Final Prioritization:

River	Pool	Criteria: Need: Defined Nav Study WLM Objective?	Need: Pool Plan Objective	Feasibility: Hydrology	Efficiency: B/C Efficiency	Acceptability: Impacts to Other Users & Other Concerns
UMR	11	Yes	Yes	High	Very High	Moderate
	12	Yes	Yes	Low	High	Moderate
	13	Yes	Yes	High	High	Moderate
	14	Yes	Yes	High	Moderate	Low
	15	Yes	Yes	High	Low	Low
	16	Yes	Yes	Moderate	Moderate	Moderate
	17	Yes	Yes	Very Low	Low	High
	18	Yes	Yes	Moderate	Moderate	Moderate
	19	Yes	Yes	Very High	High	Low
	20	Yes	No	Low	Very Low	High
	21	Yes	No	Low	Very Low	Moderate
	22	Yes	No	Low	Low	High
IWW	Dresden	No	No	Very High	Low	High
	Marseilles	No	No	Very High	Low	Moderate
	Starved Rock	No	No	High	Low	High
	Peoria	No	No	Low	High	Low
	LaGrange	No	No	Low	Moderate	Moderate

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Prioritized WLM Actions

- *Growing Season Drawdowns*: **Pools 5, 7, 8, 9, 11, 13, 16, 18, 19, 24, 25, and 26.**
- *Modifying Operation From Hinge Point to Dam Point Control*: **Pools 16, 24, 25, 26.**
- *Modifying Distribution of Flow Across Dam*: **As Needed to Provide Attracting Flows for Fish Passage.**
- *Minimizing Short-term Fluctuations*: **Entire IWW, Pool 20, and Pools with Recommended Drawdowns.**

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Growing Season Drawdowns – Benefit and Cost Information

TABLE X. Summary of Costs and Benefits Associate with Drawdowns

Pool	Drawdown Magnitude	Drawdown Success Rate	Acres Exposed	Incremental Acres Exposed	Dredging Required (yd³)	Dredging Cost	Incremental Cost	Cost per Acre	Incremental Cost per Acre
5	1	95%	1,100	1,100	135,811	$643,175	$643,175	$585	$585
	2	81%	2,200	1,100	287,236	$1,365,093	$721,918	$620	$656
	3	55%	4,000	1,800	448,088	$2,137,217	$772,124	$534	$429
	4	38%	5,500	1,500	610,333	$2,935,132	$797,915	$534	$532
7	1	98%	1,206	1,206	Minimal	$0	$0	$0	$0
	2	74%	2,331	1,125	215,000	$1,280,000	$1,280,000	$549	$1,138
	3	40%	3,385	1,054	475,000	$2,800,000	$1,520,000	$827	$1,442
8	1	74%	1,300	1,300	2,000	$88,000	$88,000	$68	$68
	2	50%	3,090	1,790	120,253	$475,000	$387,000	$154	$216
	3	33%	5,215	2,125	300,000	$1,185,000	$710,000	$227	$334
9	1	71%	4,751	4,751	0	$0	$0	$0	$0
	2	57%	6,932	2,181	75,000	$375,000	$375,000	$54	$172
	3	40%	9,497	2,565	165,000	$825,000	$450,000	$87	$175
11	1	91%	399	399			$0	$0	$0
	2	86%	883	484			$0	$0	$0
	3	86%	1,606	723			$0	$0	$0
	4	64%	2,744	1,137			$0	$0	$0
13	1	86%	1,560	1,560			$0	$0	$0
	2	86%	2,822	1,262			$0	$0	$0
	3	68%	4,519	1,697			$0	$0	$0
	4	55%	6,821	2,303			$0	$0	$0
16	1	55%	157	157			$0	$0	$0
	2	55%	307	150			$0	$0	$0
	3	50%	504	197			$0	$0	$0
	4	23%	680	176			$0	$0	$0
18	1	50%	484	484			$0	$0	$0
	2	50%	761	277			$0	$0	$0
	3	36%	1,054	293			$0	$0	$0
	4	18%	1,305	251			$0	$0	$0
19	1	100%	790	790			$0	$0	$0
	2	100%	1,627	836			$0	$0	$0
	3	100%	2,752	1,126			$0	$0	$0
	4	100%	3,685	933			$0	$0	$0

St. Louis District:

Different Conditions…

Pool	Method	Drawdown Success Rate: 1-Foot	Drawdown Success Rate: 2-Foot	Average Acres Exposed	Incremental Acres Exposed	Dredging Required (yd³)	Dredging Cost	Incremental Cost	Cost per Acre	Incremental Cost per Acre
24	No Dredging	75%	22%	1,368	1,368	0	$0	$0	$0	$0
	Dredging	80%	47%	1,540	172	NA	$100,000	$100,000	$65	$581
25	No Dredging	86%	75%	1,542	1,542	0	$0	$0	$0	$0
	Dredging	90%	80%	1,596	54	NA	$100,000	$100,000	$63	$1,852
Mel Price	No Dredging	86%	42%	1,634	1,634	0	$0	$0	$0	$0
	Dredging	95%	75%	1,910	276	NA	$100,000	$100,000	$52	$362

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Hinge-Point to Dam-Point Control

Primary Benefits:

- Improved overwintering conditions
  - o Additional Habitat
  - o Higher DO levels

Primary Costs / Impacts:

- Real Estate Acquisition
- Blocked Gravity Drainage
- Impacts to Levee Districts
  - o Seepage
  - o Increased Pumping Head

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Example: Pool 16

- Hinge Point at Fairport, IA
- Primary Control Point at Dam
- Drawdown Begins at 75,000 cfs
- Maximum Drawdown of 1.4 feet at the Dam
- Once Maximum Drawdown is Established at L&D 16, it is Maintained Until the Dam Goes Out of Operation

In MVP, they call this type of operation "Tertiary Control", similar to L&D 10.

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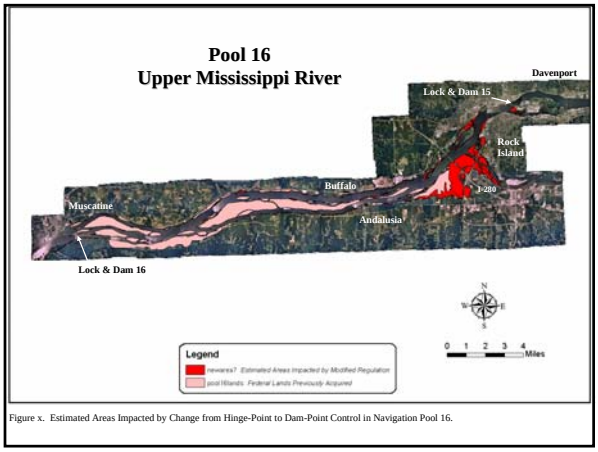

Figure x. Estimated Areas Impacted by Change from Hinge-Point to Dam-Point Control in Navigation Pool 16.

Fish Passage Team Members

Luther Aadland MN DNR	Aaron Buesing Corps St. Paul
Butch Atwood IL DNR	Mark Cornish Corps Rock Island
Ron Benjamin WI DNR	Isaac Hodgins Corps Rock Island
Bernard Schonhoff IA DNR	Dan Johnson Corps Rock Island
Ken Brummett MO DOC	Brian Johnson Corps St. Louis
Bob Clevenstine USFWS Rock Isl.	Gary Lee Corps St. Louis
Gary Wege USFWS St. Paul	Mike Cox Corps Rock Island
Greg Conover USFWS Marion IL	Kari Layman Corps St. Paul
Chuck Surprenant USFWS Marion IL	Ken Cook Corps Rock Island
Scott Yess UFWS LaCrosse	John Nestler Corps ERDC
Brian Ickes USGS LaCrosse	Elliot Stefanik Corps St. Paul
Steve Zigler USGS LaCrosse	Dan Wilcox Corps St. Paul

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Migratory Fishes in the UMR

- Silver lamprey
- Lake sturgeon
- Shovelnose sturgeon
- Paddlefish
- Goldeye
- Mooneye
- American eel
- Alabama shad
- Skipjack herring
- Bigmouth buffalo
- Smallmouth buffalo
- Blue sucker
- White sucker
- Spotted sucker
- Blue catfish
- Channel catfish
- Flathead catfish
- Northern pike
- White bass
- Yellow bass
- Smallmouth bass
- Largemouth bass
- Sauger
- Walleye

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Endangered and At-risk Fishes

Pallid Sturgeon

Blue Catfish

Lake Sturgeon

Paddlefish

Alternatives for Improving Fish Passage

- **Assisted Lockage**
- **Modified Dam Gate Operation**
- **Modified Dam Gate Bay Configuration**
- **Technical Fishways**
- **Nature-Like Fishways at Main Channel Navigation Dams**
- **Small-Scale Fishways at Overflow Spillway Sections**
- **Large-Scale Fish Passageways**

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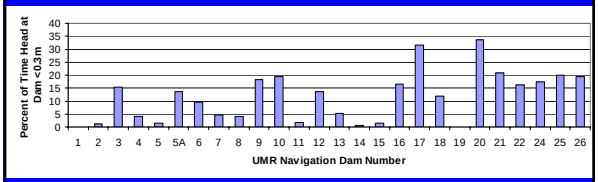
Percent of Time that UMR Dams are Uncontrolled (Gates out of Water)



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Recommendations

- **Conduct detailed planning for fish passage improvements at Mississippi River Locks and Dams 4, 8, 10, 11, 13, and 24.**
- **Incorporate innovative design and construction techniques to reduce the cost of fish passage improvements.**

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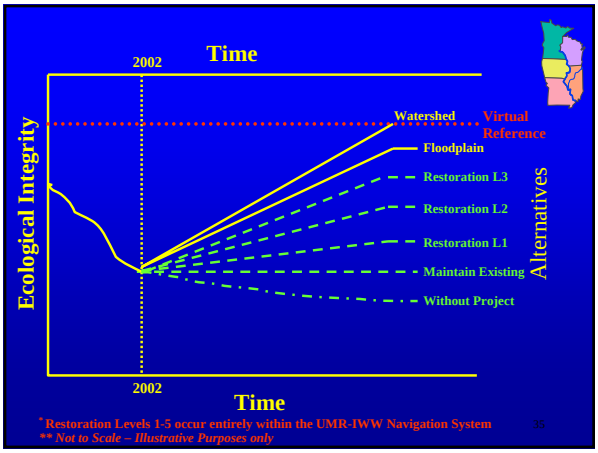

*Restoration Levels 1-5 occur entirely within the UMR-IWW Navigation System
** *Not to Scale – Illustrative Purposes only*

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UMR-IWW Environmental Alternative Formulation and Restoration Levels

Without Project – Maintain environmental management and restoration at current levels

Maintain Existing – Maintain the existing ecosystem condition (e.g., island protection, water level management)

Restoration Level 1 – Restore directly affected aquatic habitat

Restoration Level 2 – Restore most contiguous aquatic areas / Maximize restoration benefits

Restoration Level 3 – Restore most areas in context to the Navigation Project

Virtual Reference – Address all stakeholder objectives

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UMR-IWW Environmental Alternative Formulation

Upper Mississippi River - Illinois Waterway

Ecosystem Needs	Management Action	Predicted Outcomes	Maintain	Restoration Level 1	Restoration Level 2	Restoration Level 3	Virtual Reference
Connectivity	Building Islands	Topo/Bathy Diversity and increased aquatic plants	0	54	81	101	158
	Fish Passage	Fish Migrations/Habitat	x	x	x	x	32
	Levee Modification	Increased habitat access and quality; land acquisition	0	1	17	82	103
Natural Hydrology	WLM - Pool Scale	Increased aquatic plant abundance; improved soil, sediment, water quality	12	12	12	12	24
	WLM - Backwater	Increased aquatic plant abundance; improved soil, sediment, water quality	0	0	7	11	11
Aquatic Habitat	Backwater Dredging	Improved fish over wintering habitat and bathy. Diversity	1	135	211	253	372
	Side Channel Rest.	Improved aquatic habitat	0	72	97	111	112
	Dike Alteration	Improved aquatic habitat	0	12	19	22	24
Terrestrial Habitat	Island Protection	Diverse topography and plant communities	146	146	146	146	146
	Topographic Diversity	Diverse topography and plant communities	0	15	19	19	19
Total			159	447	609	757	999
Percent of Total			16%	45%	61%	76%	100%

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Ecosystem Alternative Assessment Matrix

Alternative	Geomor-phology	Hydrology	Water Quality	Habitat	Biota
Maintain					
Rest Lev 1					
Rest Lev 2					
Rest Lev 3					
Virtual Reference					

Evaluate Distributional Characteristics

Risk Robustness Adaptability Acceptability

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UMR-IWW Navigation Feasibility Study
Environmental Expert Panel Participants

*Ken Lubinski, USGS-UMESC, Co-Chair
John Barko, ERDC-EL, Co-Chair
*Mark Bain, Cornell University
*Gordon Farabee
*Robb Jacobson, USGS, Columbia
*Dave Soballe, USACE-ERDC
*John Nestler, ERDC-EL
*Carl Korschgen, USGS, Columbia
Steve Bartell, CADMUS
Tatsuaki Nakato, University of Iowa

Clint Beckert, USACE-MVR
Bob Clevenstine, USFWS
Robert Davinroy, USACE-MVS
Chuck Theiling, USACE-MVR
Kevin Landwehr, USACE-MVR
Jon Hendrickson, USACE-MVP
Jean O'Neil, ERDC-EL
Dan Wilcox, USACE-MVP

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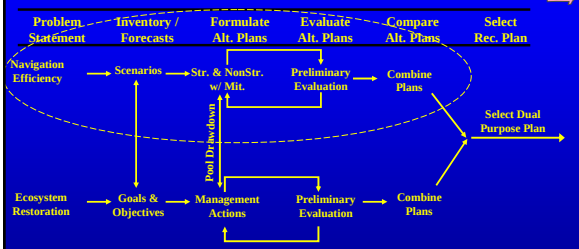
Navigation Efficiency



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Navigation Altern. Assessment Matrix

Altern.	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1					
2					
3					
4					
n					

Evaluate Distributional Characteristics

Risk Robustness Adaptability Acceptability

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Navigation Altern. Assessment Matrix

Alternatives	Scenario 1
1	TCM ESSENCE Environ. Impacts* Regional Econ. Develop.* Social Impacts*

*Not yet complete

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Navigation Efficiency Alternatives

Alternative 1: No Action

Alternative 2: Congestion Fees implemented through a lockage fee

First Cost of Infrastructure Improvements: None

Annual Administration Cost: $1.0M

Total Ave Annual Cost: $1.0M

Completion Date: 2007

Alternative 3: Scheduling/Demand Management

Navigation Efficiency Alternatives

Alternative 4:

- ✓ Moorings @ 12, 14, 18, 20, 22, 24, & LGR
- ✓ Switchboats @ 20-25

First Cost of Infrastructure Improvements: $5 M w/o Mitigation or O&M

Annual SWB Operation Cost: 18.1M

Total Ave Annual Cost: $18.5M

Completion Date: 2009

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Navigation Efficiency Alternatives

Alternative 5:

- ✓ Moorings @ 12, 14, 18, 24, & LGR
- ✓ Switchboats @ 14-18, PEO, &LGR
- ✓ Lock Extensions @ 20-25

First Cost of Infrastructure Improvements: $652.4M w/o Mitigation or O&M

Annual SWB Operation Cost: $35.9M

Total Ave Annual Cost: $108M

Completion Date: 2023

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Navigation Efficiency Alternatives

Alternative 6:

- ✓ Moorings at L&D 12, 14, 18, & 24
- ✓ Switchboats @ 11-13
- ✓ Lock Extensions @ 14-18
- ✓ New 1200' Locks @ 20-25, PEO, & LGR

First Cost of Infrastructure Improvements: $2.1B w/o Mitigation or O&M

Annual SWB Operation Cost: $8M

Total Ave Annual Cost: $188M

Completion Date: 2035

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Construction Schedules

- Alternative 4
  - Moorings: 2005-2008
  - Switchboats UM20-UM25: 2009
- Alternative 5
  - Moorings: 2005-2008
  - Lock Ext. UM20-UM25: 2005-2022
  - Switchboats P&L: 2009
  - Switchboats UM14-UM18: 2023

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Construction Schedules

- Alternative 6
  - Moorings: 2005-2007
  - New Locks UM20-UM25: 2005-2022
  - Lock Ext. UM14-UM18: 2015-2028
  - New Locks P&L: 2021-2034
  - Switchboats UM11-UM13: 2029

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Navigation Efficiency Alternatives

Alternative 5a:

- ✓ **Moorings @ 12, 14, 18, 24, & LGR**
- ✓ **Switchboats @ 14-18, PEO, &LGR**
- ✓ ~~**Lock Extensions @ 20-25**~~
- ✓ **New 1200' Locks @ 20-25**

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Navigation Efficiency Alternatives

Alternative 6a:

- ✓ **Moorings at L&D 12, 14, 18, & 24**
- ✓ **Switchboats @ 11-13**
- ✓ **Lock Extensions @ 14-18**
- ✓ **New 1200' Locks @ 20-25** ~~**PEO, & LGR**~~

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Review Evaluation Matrix

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Alternative 5A Results/Conclusions

- First costs of locks increase by $365 million; annual costs increase by $42 million
- Positive net benefits (exclusive of mitigation costs) in 7 of 15 conditions
- Net benefits decline significantly for every condition compared to Alternative 5

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Alternative 6A Results/Conclusions

- First costs of locks decrease by $392 million; annual costs decrease by $19 million
- Positive net benefits (exclusive of mitigation costs) in 7 of 15 conditions
- Incremental net benefits for Peoria & LaGrange positive for 11 of 15 conditions (for a 2021 start)

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Risk/Robustness

Risk. The potential net economic costs and benefits of selecting or not selecting an alternative. This can be measured by the differential between costs or benefits of an alternative depending on the scenario and model output. Stated another way, if you select the wrong alternative, given a particular set of economic conditions, how serious would the consequences be either in terms of unnecessary investment if too large an investment in navigation improvements is selected or benefits foregone if too small an investment is selected.

Robustness: The extent to which the alternative is economically justified under a wide range of traffic

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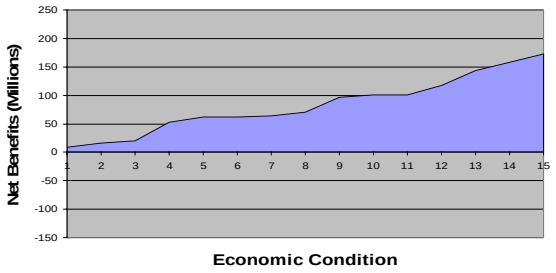
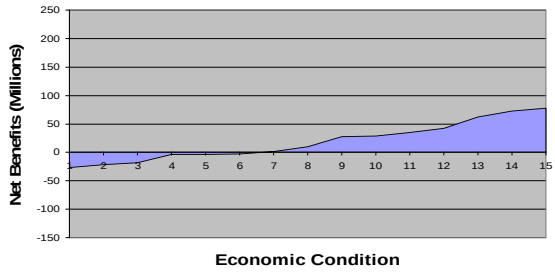
Risk/Robustness

Graph 3 Alt. 2 Benefit Distribution



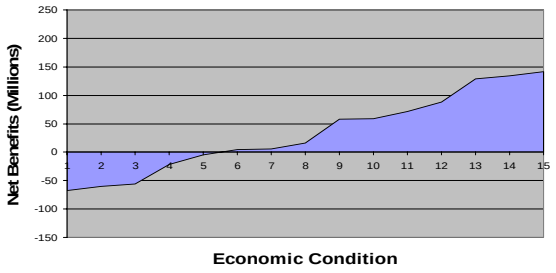
Risk/Robustness

Graph 4 Alt. 4 Benefit Distribution



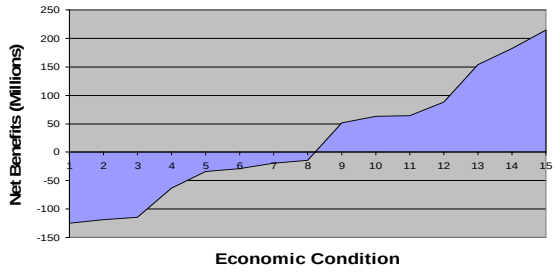
Risk/Robustness

Graph 5 Alt. 5 Benefit Distribution



Risk/Robustness

Graph 6 Alt. 6 Benefit Distribution



What is the risk of selecting Alt. 1 given these economic conditions?

	Scenario 5
	ELB
Alternative 1	0
Alternative 2	116,625
Alternative 3	
Alternative 4	34,657
Alternative 5	70,674
Alternative 6	88,257

Alt 1 generates $0 in positive benefits.

Alt 2 generates highest net benefits of $116,625m.

Foregone benefits of selecting Alt 1 given scenario 5 traffic=$116,625m-$0=$116,625

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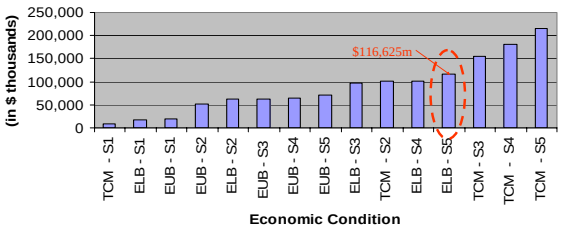
Risk/Robustness

Alternative 1
Average Annual Net Benefits Forgone
Given an Economic Condition



What is the risk of selecting Alt. 2 given these economic conditions?

	Scenario 5
	ELB
Alternative 1	0
Alternative 2	116,625
Alternative 3	
Alternative 4	34,657
Alternative 5	70,674
Alternative 6	88,257

Alt 2 represents the alternative with the highest net benefits.

Risk of foregoing benefits is 0

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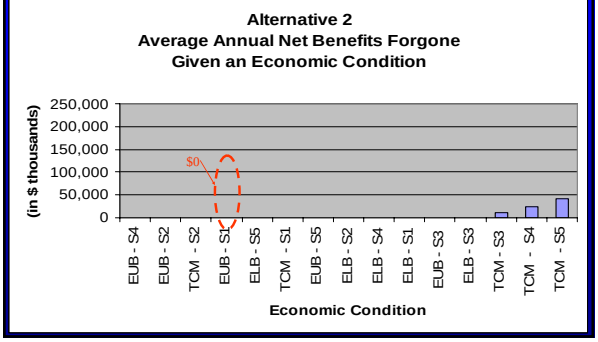
Risk/Robustness



What is the risk of selecting Alt. 4 given these economic conditions?

	Scenario 5
	ELB
Alternative 1	0
Alternative 2	116,625
Alternative 3	
Alternative 4	34,657
Alternative 5	70,674
Alternative 6	88,257

Alt 4 generates $34,657m in positive benefits.

Alt 2 generates highest net benefits of $116,625m.

Foregone benefits of selecting Alt 4 given scenario 5 traffic=$116,625m-$34,657m=$81,968m

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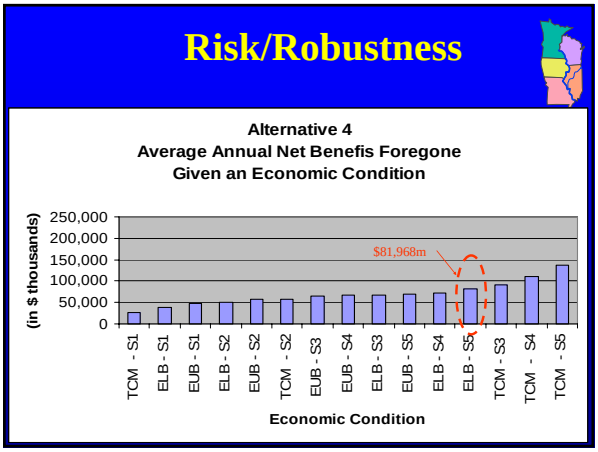
Risk/Robustness



What is the risk of selecting Alt. 5 given these economic conditions?

	Scenario 5
	ELB
Alternative 1	0
Alternative 2	116,625
Alternative 3	
Alternative 4	34,657
Alternative 5	70,674
Alternative 6	88,257

Alt 5 generates $70,674m in positive benefits.

Alt 2 generates highest net benefits of $116,625m.

Foregone benefits of selecting Alt 5 given scenario 5 traffic=$116,625m-$70,674m=$45,951m

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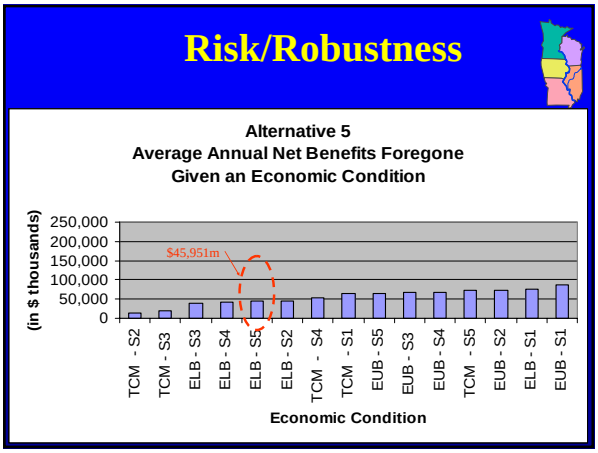
Risk/Robustness



What is the risk of selecting Alt. 6 given these economic conditions?

	Scenario 5
	ELB
Alternative 1	0
Alternative 2	116,625
Alternative 3	
Alternative 4	34,657
Alternative 5	70,674
Alternative 6	88,257

Alt 6 generates $88,257m in positive benefits.

Alt 2 generates highest net benefits of $116,625m.

Foregone benefits of selecting Alt 6 given scenario 5 traffic=$116,625m-$88,257m=$28,368m

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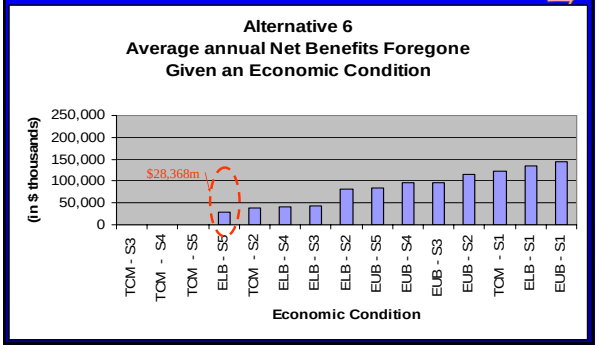
Risk/Robustness



Adaptive Management

The ability to adjust the alternative based on changes in future conditions

- Construct Mooring Cells and Utilize Switchboats and Monitor the Performance of These Measures Before Constructing Lock Extensions or New Locks.
- Authorize the Lock Extensions or New Locks With a Series of Decisions Points to Adapt the Plan Based on the Latest Information on Delays and Traffic Trends.
- Re-evaluate the Recommended Plan Based on the Results of Any New Economic Model Emerging From the Corps Navigation Economics Technologies (NETS) Research Program.

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Acceptability

Acceptability is the workability and viability of the alternative plan with respect to acceptance by State and local entities and the public and compatibility with existing laws, regulations, and public policies.

- Federal Principals Task
  - FWS, EPA, AG, & DOT
- Minnesota, Wisconsin, Illinois, Iowa, & Missouri
- Non-governmental Organizations
- General Public

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Congestion Fees

The NED basis for the evaluation of congestion fees is the recognition that an economic externality results each time a unit of traffic is added at a lock.

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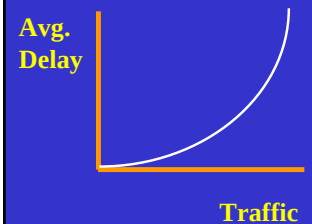
Congestion Fees



- The addition of each ton raises expected average delay.
- The new higher expected delay is faced by all tons, not just the additional tons.

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Congestion Fees

Tons		Expected Average Delay		Total Delay	
100	10	5	2	500	270
110		7		770	
120		10		1,200	

Costs borne by additional tons: = 70 (10 x 7)
Additional costs borne by system: = 270 (10 x 7)+(100 x 2)

Congestion Fees

- Additional tons enter the system because each is willing to pay the cost of the expected average delay.
- However, the cost to the system (270) resulting from the additional tons is far in excess of the cost (70) that the additional tons bear. *This is the nature of the externality.*

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Congestion Fees

Is the inclusion of the additional tons a desirable situation from a NED perspective?

If the additional tons are willing to absorb the value of the resulting hours of expected average delay plus the value of the increase in delay placed on existing tons, then the system benefits (there is an increase in NED efficiency.)

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Congestion Fees

Consequences of an Optimal Fee

- Equilibrium is established at a higher price and a lower quantity (tonnage).
- All tons that contribute more to system congestion costs than to internalized savings will be induced to leave the system.

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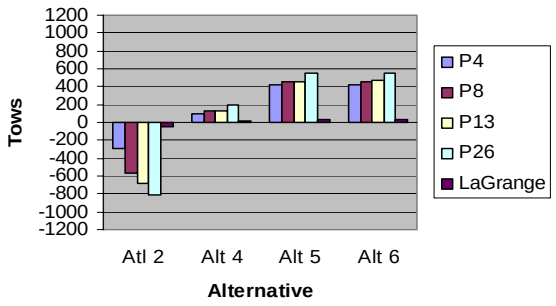
2030 Annual Incremental Tows
Central Trade Scenario - TCM



Water Level Management

Navigation Impacts

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Water Level Management

- Drawn down to 6 feet results in loss of navigation
- Entire Mississippi River above Lock 26 is closed for 60 days (Jul-Aug)
- First closure in year 2007
- Repeats on a five-year cycle
- Not coordinated with major rehab closures

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Water Level Management

Tow Cost Model - Reduction in Savings
Average Annual (in $millions)
Adjusted to Common Base Year 2023

	S1	S2	S3	S4	S5
Alt 1	49.5	69.3	57.6	57.6	54.5
Alt 4	37.1	65.4	57.6	58.7	60.5
Alt 5	30.9	74.3	71.7	71.9	73.4
Alt 6	27.9	59.1	70.1	76.7	84.3

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Water Level Management

Net Benefits Adjusted to Common Base Year 2023
Exclusive of System Mitigation Costs
(in $ millions)

	S1	S2	S3	S4	S5
Alt 1	0	0	0	0	0
Alt 4	-17.7	42.0	62.0	71.9	78.0
Alt 5	-55.8	87.7	133.9	129.2	141.1
Alt 6	-114.0	63.0	154.4	181.5	215.4
Alt 1 w/closures	-49.5	-69.3	-57.6	-57.6	-54.5
Alt 4 w/closures	-54.8	-23.4	4.4	13.2	17.5
Alt 5 w/closures	-86.7	13.4	62.2	57.3	67.7
Alt 6 w/closures	-141.9	3.9	84.3	104.8	131.1

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Regional Economic Development

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Regional Economic Development

- Regional Economic Development Incorporated (REMI) model will be used to estimate impacts
- Model Structure
  - 7 regions: IA, IL, MN, MO, WI, Southern Region (AL, AR, KY, LA, MS, TN, TX), and Rest of U.S.
  - 53 industry sectors

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Regional Economic Development

- Impacts (income and employment) are generated by construction expenditures and transportation savings for navigation efficiency alternatives and by construction expenditures for environmental alternatives

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Social Impacts

- Emissions Impacts
- Energy Conservation Impacts
- Safety Impacts
- Accident Impacts
- Noise and Other Community Impacts

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Mitigation Planning Update

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Feasibility Study Schedule

•Tentative Plans Identified	Sep 03
•GLC Conference Call	Oct 03
•NECC/ECC	Oct 03
•Federal Task Force	Oct 03
•Public Meetings	Oct 03
•Alternative Formulation Briefing	Jan 04
•Draft Feasibility Report	Apr 04
•90 day Public Review	Apr-Jun 04
•Public Meetings	May 04
•Final Feasibility Report w/EIS	Aug 04
•Chiefs Report	Oct 04